

THE UNIVERSITY OF KANSAS SCIENCE BULLETIN

VOL. XXII.]

APRIL 15, 1935

[No. 6.

Miscellaneous Notes on Mexican Lizards

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ABSTRACT: The study is based upon the material secured in Mexico in the collections of Edward H. Taylor, David H. Dunkle and Hobart M. Smith. Notes are given on *Hemidactylus turcicus*, *Iguana rhinolopha*, *Ctenosaura pectinata*, *C. acanthura*, *C. similis*, *C. hemilopha*, *Basiliscus vittatus*, *Crotaphytus collaris collaris*, *C. wislizenii*, *Phrynosoma cornutum*, *P. modestum*, *Ameiva undulata undulata*, *Heloderma horridum* and *Anelytropis papillosus*. *Phyllodactylus lanei* and *P. homolepidurus* are described as new.

THE following notes are based upon the specimens of certain miscellaneous genera of lizards contained in three collections from Mexico: One secured during the summer of 1932 by Dr. Edward H. Taylor and myself, another during the summer of 1934 by Mr. David H. Dunkle and myself, and the other during the summer of 1934 by Doctor Taylor (specimens in these collections indicated by EHT and HMS, DHD and HMS, and EHT, respectively).

I wish here to express my appreciation for the aid received, in the collection and study of this material, from Dr. Edward H. Taylor, Mr. David H. Dunkle, Mr. C. D. Bunker and Dr. H. H. Lane. I am further indebted to Mr. L. M. Klauber, who has loaned specimens of *Phyllodactylus* from the United States and Baja California; to Dr. Leonhard Stejneger, who has given notes from the log of Meyen's "Reise um die Erde" relative to the type locality of Meyen's *Phyllodactylus tuberculosus*; to Dr. J. W. Bailey, who has kindly examined and offered his opinion concerning the identity of some of the *Ctenosaurs*; and to Mr. J. C. Bay, of John Crerar Library, for his kindness in loaning necessary reference works. The study has been aided by a grant from the University of Kansas graduate research fund.

PHYLLODACTYLUS

Phyllodactylus tuberculosus was described by Wiegmann in 1835 in a discussion of the herpetological material collected by Meyen on his Reise um die Erde. The locality from which the specimen came was given as "Californien."

It has generally been accepted that "Californien" was the territory now known as either the state of Baja California, in Mexico, or the state of California, of the United States, in which region there actually exists at least one form of *Phyllodactylus* to which Weigmann's name has been applied. However, there are a number of important facts which show that this interpretation cannot be correct.

In reply to an inquiry from Doctor Taylor, Doctor Stejneger has stated (in letter) that, according to the log of Meyen's trip, "the *Prinzess Louise* did not touch in California at all. She sailed directly from Hamburg to Rio de Janeiro and from there to Valparaiso. From there Meyen visited Santiago and undertook an excursion to the province of Colchagua, left Santiago February 2, 1831, ascended Monte Imposible and returned to Santiago on February 11. Another excursion to the volcano Maipú, February 14, and back in Valparaiso February 25. *Prinzess Louise* left Valparaiso March 6. On March 8 Meyen was ashore at Coquimbo, and on March 11 at Copiapó, making from here an excursion to Nantoko and La Punta, back in Copiapó March 19. *P. L.* left next day for and arrived in Arica, Peru, March 26. From here Meyen traveled over Tacna to Lake Titicaca, arriving April 7. Returned over Arequipa, arriving in Islay April 23, joining the *P. L.* in Callao April 28. From May 4-16 in Lima, with short excursions in the surrounding country. The *P. L.* left Callao May 21 directly for Honolulu, arriving there June 24, 1831. Left Honolulu direct for Canton, China, without touching land. Arrived in China August 13.

"Neither the *Prinzess Louise* nor Meyen visited California nor any other American port north of Callao.

"I have glanced through the text of Meyen's account of the journey, but have found no reference that would throw any light on the type locality of *Phyllodactylus tuberculosus*."

It may be added that, were this type locality the California of North America, it would be the only locality in North or Central America mentioned by Weigmann in his whole paper. It would seem almost beyond doubt that "Californien" must refer to some small village near one of the ports Meyen is known to have visited.

Moreover, the original description of *P. tuberculosus* differs widely from the characteristics of specimens available from the United States and Mexico, including Baja California. It has appeared, from the study of this material, that the name *tuberculosus* must be applied to the South American and possibly also to the Galapagos Islands form, which has been known by that name; previously confused with this species are at least two others, one of which is a distinct tropical form existing in Mexico and possibly Central America, the other, equally distinct and desert-inhabiting, occurring in Sonora and, probably, southern California and Baja California. The latter two species are described below.

Phyllodactylus homolepidurus sp. n.

(Text fig. 1A; Plate XXV, fig. 2)

Type. Male, EHT No. 146, collected five miles southwest of Hermosillo, June 22, 1934, by Edward H. Taylor.

Paratypes. Twenty-five, including eleven collected with the type (EHT Nos. 125-127, 144, 145, 147-149, 149a, 150, 151); eleven from a locality 10 miles northwest of Guaymas, June 28 to July 9, 1934 (EHT Nos. 221, 225, 272, 273, 302, 303, 384, 384a, 384b, 515, 516); and three taken 4 miles southeast of Guaymas, on Empalme road, July 13, 1934 (EHT Nos. 518-520). All collected by Edward H. Taylor.

Diagnosis. A *Phyllodactylus* attaining a maximum snout to vent length of 65 mm. to 70 mm.; occipital scales granular, about equal in size to those on body; interorbital scales considerably smaller than median scales in frontonasal region; no row of scales following postmentals; six or seven upper labials to a point below the middle of the eye; scales of body small but squamous and definitely imbricate; tubercles on body very low, keeled, round or oval; no tubercles on humerus, rarely a few on femur; two or three rows of low, weakly keeled scales on each side at base of tail, decreasing distally to one row on each side of flat, smooth, scarcely enlarged scales, which disappears at about half the distance between the base and distal end; scales granular on posterior surface of femur and dorsal surface of tibia; cloacal bones of males with the median termination in the form of two somewhat spherical lobes whose median axis is at right angles to the plane of the remainder of the bone; tail with indistinct bands of darker gray; dark gray or slate-black crossbars on back, usually interrupted medially by a light line passing from occiput to base of tail; ventral surfaces usually very

lightly stippled with black, rarely stippled sufficiently heavy to be visible to the naked eye.

Description of Type. Head flattened; dorsal profile (lateral view) of head a straight line from orbit to snout, the orbits very slightly projecting, the occipital region not elevated, almost parallel with axis of body; snout rounded; sides of head (dorsal view) smoothly rounded from orbit to snout; jaws slightly constricted at level of orbits; frontonasal groove rather shallow; loreal region weakly concave, at an angle of about 45° with the horizontal; interorbital scales in about eleven rows, about one third the size of the median scales in the frontonasal region and about equal in size to the granular scales of occiput and body; numerous very small, conical or rounded tubercles scattered over occipital and temporal regions; about eleven upper labials, six or seven to a point below middle of eye; six or seven lower labials to a point below middle of eye; rostral about twice as broad as long, rectangular, partially split in the posterior median line, its postero-lateral corners in contact with nares; two internasals, in contact medially, irregular in shape, about as long as broad; mental large, definitely triangular, its labial border about one fourth greater than that of rostral; mental followed by two large, oval postmentals, narrowly in contact on the median line, and bordering the first labial laterally; scales following postmentals irregular, larger than median gulars, into which they grade; gulars small, merging with the abdominals in the cervical region; granules on body smooth, flat, imbricate; maximum of eight irregular, longitudinal rows of enlarged tubercles on each side of back; tubercles low, weakly keeled, oval and slightly trihedral on eight median rows; lateral tubercles more rounded, sharply truncate on posterior end and slightly more elevated, not conical; tubercles on neck low, rounded, convex, not keeled or conical; scales of anterior surface of upper foreleg about three fourths the size of ventral abdominals, somewhat smaller on posterior and dorsal surfaces; ventral scales of upper foreleg granular; scales on anterior surface of lower foreleg slightly smaller than ventral abdominals; those on dorsal surface of the same member granular, with a few scattered, conical, enlarged tubercles; ventral scales of lower foreleg very small, but squamous; lamellar formula for fingers (to bases and excluding terminal lamella): 6-9-11-12-9, at least the distal lamella, in all cases, divided; scales on anterior and ventral surfaces of femur squamous, the latter smaller than the former and of approximately the same size as the ventral abdominals; scales on dorsal and posterior sur-

faces of femur very small, without enlarged tubercles intermixed; ventral scales of tibia slightly smaller than ventrals on femur; scales on anterior surface of tibia slightly smaller than the ventrals of the same member; dorsal scales of tibia very small, with scattered, enlarged, rounded, conical or convex tubercles; no tubercles on dorsal surface of foot; lamellar formula for toes (to bases and excluding terminal lamella): 6-10-13-14-12; at least the distal lamella, in all cases, divided; scales in axilla and groin, above insertion of foreleg and behind and above insertion of hindleg, very small or granular; cloacal wall produced backward, in the median ventral line, only very slightly; on each side of the median line, at the base of the tail and near the anus, is a narrow, transverse pore opening into a sac below the cloacal bone, but not connected with the hemipenis; four slightly enlarged scales in an oblique row immediately behind insertion of hind leg and near anus; four dorsal rows of enlarged, smooth or very weakly keeled scales continued onto base of tail, disappearing entirely a few millimeters beyond base; scales on remainder of tail smooth, small, imbricate, in regular annuli; a series of large, transverse subcaudals extending the full length of the tail, divided near proximal end of tail, irregularly broken near anus.

Ground color above almost white; a distinct dark-gray line from snout through middle of orbit to upper margin of ear; a few irregular, grayish markings in temporal and occipital regions; a series of about eight irregular, gray crossbars on back from scapular region to base of tail, these bifurcating on the sides; tail with broad, dim rings of gray, slightly darker posteriorly, alternating with rings of whitish; hind limbs irregularly marked with gray; forelimbs dimly banded; venter whitish, immaculate except for fine stippling of black, practically invisible to the naked eye; stippling more concentrated on ventral surfaces of tail and hind limbs.

The cloacal bones are curved, flattened in a horizontal plane at the outer end, gradually twisting toward the median line. The median end is in a vertical plane and is modified into the form of a bilobed spheroid. The bone curves about the postanal pore of the corresponding side.

Variation. The scale characters are constant for the most part. The mental is frequently pentagonal instead of triangular; the postmentals may or may not be separated on the median line by an azygous scale. The tubercles on the nape may be smooth, conical or weakly keeled; the tubercles on the body are always small, low and

Measurements and scale counts of *Phyllodactylus homolepidurus*

Number.....	351	273	147	519	518	225	146	515	144	149	516	145	415b	148	415a
Sex.....	♂	♂	♂	♂	♀	♂	♂	♀	♀	♂	♀	♂	♀	♀	♀
Snout to vent.....	46.0	47.0	48.5	49.5	54.0	51.5	55.0	53.5	58.5	58.6	60.0	60.0	62.5	65.0	67.5
Snout to ear.....	11.0	12.0	12.5	12.6	13.3	13.0	12.5	14.9	14.5	14.0	15.0	15.0	14.6	15.0	16.0
Head width.....	9.7	10.0	10.8	11.0	11.0	11.4	11.5	12.3	12.8	12.7	12.8	12.6	12.0	12.8	14.2
Snout to orbit.....	5.6	5.7	5.8	5.5	6.8	6.0	6.0	6.9	6.5	7.0	7.2	7.0	7.0	7.2	7.8
Diameter of orbit.....	3.0	3.2	3.1	3.3	3.4	3.4	3.0	3.5	3.1	3.6	3.7	3.2	3.6	3.5	3.9
Foreleg.....	15.0	15.0	16.0	17.0	18.2	18.2	17.5	19.5	20.1	19.0	20.0	21.0	21.0	21.0	21.5
Hindleg.....	21.0	20.5	22.5	20.7	23.0	23.5	23.0	27.5	26.5	26.0	.....	26.7	28.5	27.2	28.1
Fourth toe.....	5.1	6.0	6.3	6.0	7.6	6.2	6.3	6.9	7.1	7.0	6.9	7.0	7.5	7.2	7.6
Upper labials*.....	6-6	6-7	6-6	6-7	7-7	7-7	6-7	7-8	7-7	6-7	7-6	7.7	7-7	7-7	7.7
Lower labials*.....	6-5	5-6	5-5	5-5	6-7	6-6	6-7	6-6	5.5	5-6	6-6	6-6	6-6	5-5	6-7
Ventrals, transverse.....	32	32	28	.....	29	29	30	31	34	30	33	28	30	29	33
Ventrals, longitudinal†.....	54	54	54	51	55	55	59	57	59	58	57	59	56	59	59

* Labials counted to a point below middle of eye.

† Counted from anterior margin of insertion of foreleg.

weakly keeled, and those on the tail, if distinguishable, are scarcely so, and are smooth.

The postanal pores are present in both males and females, although larger and more conspicuous in males. Cloacal bones are present only in males. Sexes may easily be distinguished by probing the flesh in front of the postanal pores, determining the presence or absence of the cloacal bones. The oblique row of slightly enlarged scales immediately behind the insertion of the hindleg are present in both males and females, although slightly more enlarged in the former.

There seems to be no marked sexual dimorphism in color. The color pattern is practically identical in all specimens.

Comparisons. Comparisons of this species with *P. tuberculosus* and *P. lanci* are given in the discussion under the latter species.

Habits and Habitat. The specimens were secured in arid or semi-arid regions, and were taken at night in shrubs, on the ground between rocks or on the rocks themselves.

Some of the females contained well-developed eggs in the oviducts.

Distribution. It seems likely that at least a portion of the numerous records of *P. tuberculosus* from Baja California, and those from the southern part of California, are based upon specimens of the species described above. Mr. Klauber has kindly loaned material for comparison from these localities, at least part of which seems to be identical with the specimens from Sonora. The specimens of *P. tuberculosus* recorded by Allen (1933) from Sonora and Cope (1900) from Chihuahua are probably *P. homolepidurus*.

Phyllodactylus lanei sp. n.

(Text fig. 1B; Plate XXV, fig. 3)

Type. EHT and HMS No. 1461, male, collected near Tierra Colorada, Guerrero, Mexico, June 30, 1932, by Edward H. Taylor and Hobart M. Smith.

Paratypes. Twenty-nine, nine of which were collected with the type (EHT and HMS Nos. 1458, 1459, 1462, 1516-1520, 1522); three from a locality 44 miles south of Chilpancingo (2 miles south of Gavapata), Guerrero, June 27, 1932 (EHT and HMS Nos. 1181-1183); ten from a locality about 1 mile north of Organos (south of El Treinte), Guerrero, June 28, 1932 (EHT and HMS Nos. 1339-1346, 1419, 1420); four taken between Rincon and Cajones (south of

Chilpancingo), Guerrero, July 7, 1932 (EHT and HMS Nos. 1499-1502); and three from Mazatlán, Sinaloa (EHT Nos. 534, 535, July 21, 1934; No. 741, July 24, 1934).

NOTE.—EHT and HMS Nos. 1180, 1338, 1460 and 1521 were presented to the Instituto de Biología of the Universidad Nacional of Mexico. Although not examined in this study, it is almost certain that these specimens are of the same species as the above. No other species of geckos were collected in Guerrero.

Diagnosis. A *Phyllodaetylus* attaining a maximum snout to vent length of 90 mm. to 95 mm.; occipital scales usually the largest of those on upper surface of head, much larger than the granules on body; interorbital scales usually of approximately the same size as the median scales in the frontonasal region; no row of enlarged scales following postmentals; scales of body (except tubercles) almost granular, the laterals very distinctly and abruptly differentiated from the ventrals; tubercles on body very large, trihedral, ovate, strongly keeled; conical tubercles present on upper surfaces of both fore and hindlimbs and on occiput; four rows of tubercles on each side at base of tail, three continued over most of the distal portion of tail; caudal tubercles keeled; scales granular on posterior surface of femur and dorsal surface of tibia (a few enlarged, scattered tubercles on tibia); cloacal bones of males flat throughout, the median termination not in the form of a bilobed spheroid whose median axis is at right angles to the plane of the remainder of the bone; tail with indistinct bands of darker gray; two rows of rounded, grayish spots extending the length of the body from occiput to base of tail; these spots sometimes widened laterally, but not giving the impression of crossbars; lower surfaces of tail and limbs heavily stippled with black.

Description of Type. Head flattened; dorsal profile (lateral view) of head a straight line from orbit to snout, the orbits slightly projecting, the occipital region almost parallel to axis of body; snout rounded; sides of head (dorsal view) almost straight to about halfway between orbit and nostril, curving to a rounded point at snout; jaws slightly constricted at level of orbits; a deep median frontonasal groove; lores slightly concave, at an angle of about 55° with the horizontal; interorbital scales in about seven rows, slightly smaller than scales between orbit and naris, about equal in size to the median scales in frontonasal region; occipital granules larger than others on dorsum of head and much larger than granules on body; numerous small, conical tubercles scattered over occipital

and temporal regions, those in the temporal region considerably larger; twelve or thirteen upper labials, six to a point below middle of eye; nine lower labials, five or six to below middle of eye; rostral about twice as broad as long, rectangular, partially split in the posterior median line, its posterolateral corners in contact with nares; two internasals, in contact medially, somewhat broader than long; mental large, definitely triangular, its labial border about one-third greater than that of rostral; mental followed by two large, oval postmentals; these in contact with each other medially and with the first labial laterally; postmentals followed by four smaller scales in a row between labials; these followed by scales which gradually merge with the gulars; gulars small, merging with the abdominals in the cervical region; granules on body smooth, flat or slightly rounded; about eight longitudinal rows of enlarged tubercles on each side of back, the two median rows very distinct and straight, the six lateral rows more or less indistinct; tubercles of median rows oval, strongly keeled, trihedral, but those of lateral rows becoming round and conical; scales on upper foreleg rather heterogeneous, mostly keeled and elevated as are the tubercles on the body, with smaller, smooth scales interspersed between; scales on anterior aspect of upper foreleg about as large as those on belly, mostly smooth, but becoming keeled toward dorsum; ventral scales of upper foreleg granular; ventral scales of lower foreleg larger, but slightly smaller than ventral abdominals; dorsal scales of same member small, of about the same size as those on back, with scattered, keeled tubercles; lamellar formula for fingers (to bases and excluding terminal lamella): 7-10-11-14-10; at least the distal lamella, in all cases, divided; scales on ventral and anterior surfaces of femur squamous, the former smaller than the latter and of approximately the same size as abdominals; scales on upper surface of femur small, with a few large, weakly keeled or conical, oval or rounded tubercles; posterior femoral surface with granular scales; dorsal surface of foot with small scales and a few enlarged, weakly keeled, rounded tubercles; lamellar formula for toes: 7-10-15-14-12; at least the distal lamella, in all cases, divided; scales in axilla and groin, above insertion of foreleg and behind and above insertion of hindleg, very small or granular; cloacal wall produced backward about two millimeters, broadly U-shaped; on each side of this protuberance of the cloacal wall, near the anus, is a narrow, transverse pore opening into a sac below the cloacal bone, but not connected with the hemipenis; three or four slightly enlarged scales in

an oblique row immediately behind insertion of hindleg and near anus; eight dorsal rows of enlarged, weakly keeled tubercles continued onto base of tail, decreasing to six rows at the third whorl; six are present in the remaining whorls of the tail (about two thirds regenerated and with abnormal scalation); whorls of enlarged tubercles separated by four or five rows of small, smooth scales; a series of large transverse subcaudals, irregularly broken immediately behind anus.

Color above grayish; a darker band from snout to orbit and from orbit through upper part of ear to upper margin of insertion of foreleg; labial region dimly barred; a few irregular, indistinct dark spots on head; two series of darker spots near median dorsal line, passing from occiput to base of tail, about eleven in each series; forelegs dimly banded with darker; ventral surface of tail closely stippled with black; ventral surface of limbs stippled slightly with black, belly and gular region almost immaculate.

The cloacal bones are in this species flattened throughout; the lateral part of the bone is in the same plane as the body, but the bone gradually twists until, at the median tip, it may be at right angles to the plane of the body. It curves about the postanal pore of the corresponding side.

Variation. In characters not subject to sexual dimorphism, there is but little variation shown, from the above description, in the paratype series. The mental is frequently pentagonal. The postmentals are constant, but the scales behind the postmentals are quite irregular. Three rows of enlarged tubercles extend down each side of the tail to about the fifth to the seventh whorl; two rows continue to the twelfth or thirteenth. Only in a few specimens are there four rows at the base of the tail. The oblique row of slightly enlarged scales immediately behind the insertion of the hindleg and near the cloacal opening are present in both males and females, although slightly more enlarged in the former. The two postanal pores are of about the same character in both sexes. The enlarged tubercles on the sides of the body are not regularly conical, but frequently are trihedral, as those near the middorsal line.

The interorbital and occipital scales are usually as in the type. However, in the three specimens from Mazatlán, and in six large specimens from Guerrero (Nos. 1181-1183, 1499-1501), the interorbital scales are small and the occipital and temporal scales granular. In a young specimen (No. 1500) collected at the same locality as Nos. 1499-1501, these scales are as in the type. The

variation is not sexual. It is of interest that no such variation in the relative size of these scales occurs in the series of *P. homolepidurus*.

The dorsal spots are in some specimens partially fused, forming broken stripes down the back. In others the spots are produced transversely, but no appearance of bars is evident in any. The median dorsal line is immaculate in all.

The cloacal wall is produced posteriorly in the majority of the males (but not in all), and is never so produced in females. The cloacal bones are present only in males. There seems to be no marked sexual dimorphism in color.

Habitat. The majority of the specimens were secured under loose slabs of rock during the day, or far back in the darker recesses of the larger cracks between boulders, etc. Others were found under loose bark on trunks of trees, or deep in the rotten hearts of large standing trees. At night numbers were secured running about on the bare faces of boulders or cliffs, their gray, ghost-like forms scarcely visible.

Comparisons. From *P. homolepidurus* this species differs in a number of very obvious characters. In the former the occipital and interorbital scales are always small and subequal in size to the granular scales on the body, and much smaller than (about one fourth as large as) the median scales in the frontonasal region. In *P. lanei* they are usually much larger, as described above. The granules on the body are smaller in *P. lanei*, the laterals distinctly differentiated from the ventrals. They are larger in *P. homolepidurus* and less distinctly differentiated from the ventrals. In *P. homolepidurus* the enlarged tubercles are smaller, weakly keeled, and absent or very indistinct on the upper parts of the fore and hind legs; the tubercles of the tail are in this species very small, smooth, and not over two in a whorl, when present. The cloacal bones of *P. homolepidurus* are, at the median end, modified to form



TEXT FIGURE 1. Cloacal bone of right side, ventral view. A. *Phyllodactylus homolepidurus*. B. *Phyllodactylus lanei*.

a bilobed spheroid protuberance which is at right angles to the axis (longitudinal) of the body. The cloacal wall is apparently only very slightly produced posteriorly in males of *P. homolepidurus*, but is frequently so produced in *P. lanei*. The maximum size of the latter species far exceeds that of the former (91.5 mm. and 67.5 mm., snout to vent, respectively). *P. homolepidurus* is distinctly lighter in color, both ventrally and dorsally, and the blotches on the back tend to form broken transverse bars. Finally, the habitat of the two forms is quite different. *P. homolepidurus* is known only from arid or semiarid regions, while *P. lanei* apparently is confined to tropical regions with more or less dense vegetation.

The original description and figure of *P. tuberculosus* differs in a number of important respects from the species here described. Perhaps the most important is the shape of the terminal lamellae of the digits, which in the above figure are shown to be rounded, not truncate at the tip as in *P. lanei* and *P. homolepidurus*, and Wiegmann states that "Alle Zehen unter der Spitze mit zwei grossen verkehrt-eyförmigen, dunnen, blattartigen, ganz glatten schuppen versehen. . . ."

Secondly, in *P. tuberculosus* the enlarged tubercles on the tail are "in undeutliche Quergürtel gestellt; an reproducirten Schwänzen erscheinen sie sehr ungleich, dicht anliegend, glatt und geschindelt." Further, the mental is "jederseits von einem vieleckigen Schildchen begrenzt, hinter dem in der Quere 4-5 kleinere Schildehen liegen." Only the first-mentioned shield exists in *P. lanei* and *P. homolepidurus*.

The accuracy of reproduction in Wiegmann's figure is not assured, but in it the enlarged tubercles of the body, and especially in the temporal region, are larger even than in *P. lanei*, in which species these tubercles are in turn much larger than in Californian specimens of *Phyllodaetylus* and in *P. homolepidurus*. Moreover, the scales of the posterior surface of the femur and the dorsal surface of the tibia are shown to be quite large and not granular; they are granular, with larger scattered tubercles on the tibia, in both *P. lanei* and *P. homolepidurus*. The scales on the ventral surface of the metatarsal region are quite small and abruptly differentiated from the larger scales of the tibia in the latter two species—not as shown in the figure of *P. tuberculosus*. Finally, five upper labials are shown to a point below the middle of the eye; in neither *P. lanei* nor in *P. homolepidurus* are there less than six.

Apparently the only species of *Phyllodaetylus* recorded from

Measurements and scale counts of *Phyllodactylus lanci*

Number	741	584	1346	1339	1420	1459	1341	1458	1499	1517	1182	1500	1183	1181	1461	1501
Sex.....	♂	♀	♀	♂	♀	♀	♂	♂	♀	♂	♂	♀	♀	♂	♂	♂
Snout to vert.....	39.0	49.5	55.7	59.5	59.5	63.0	64.0	65.0	68.0	68.5	69.0	76.0	78.0	79.3	79.5	91.0
Snout to ear.....	10.5	12.0	14.5	15.1	15.0	15.9	16.6	16.0	17.0	17.0	17.0	18.0	18.0	20.0	20.0	21.5
Head width.....	8.9	10.0	11.0	12.5	11.0	12.5	13.2	12.9	13.8	14.9	14.7	15.0	15.5	16.0	16.0	17.5
Snout to orbit.....	4.9	6.0	7.1	7.8	7.1	7.8	8.0	8.0	8.0	7.8	8.8	9.0	9.0	10.0	9.8	10.0
Diameter of orbit.....	2.7	3.1	3.3	4.1	3.9	3.9	4.1	4.1	4.0	4.0	4.0	4.9	4.5	4.8	4.9	5.0
Foreleg.....	12.6	16.0	19.5	21.0	20.0	21.0	23.0	22.5	24.5	22.0	24.0	24.0	25.0	27.0	25.5	29.5
Hindleg.....	.....	19.0	24.0	25.2	27.4	26.0	28.0	28.0	33.0	30.0	29.0	32.5	35.5	33.0	34.0	38.0
Fourth toe.....	4.5	5.5	6.5	7.5	6.8	7.5	8.1	7.8	8.7	8.6	9.0	9.0	9.5	9.3	9.0	10.8
Upper labials*	6-6	7-7	7-7	7-7	6-7	6-6	7-6	6-7	7-7	6-6	7-6	7-7	6-6	7-7	6-6	6-6
Lower labials*	5-5	6-6	6-6	7-6	5-5	5-5	5-5	6-5	6-6	5-4	5-5	6-6	5-5	6-6	5-6	5-5
Ventrals, transverse.....	37	31	29	30	29	31	29	27	24	31	27	25	29	29	24	24
Ventrals, longitudinal†.....	55	55	68	70	66	64	64	66	54	64	54	53	53	53	63	55

* Labials counted to a point below middle of eye. † Counted from anterior margin of insertion of foreleg.

Mexico, aside from the forms which have been considered under the name of *P. tuberculosus*, is *P. mentalis* Werner (1910). The latter author states that the locality from which the single type specimen came is doubtful, adding the remark: "Aus dem Nachlasse von L. v. Poppinghausen, also wahrscheinlich Zentralamerika, speziell Mexico." Burt and Burt (1933) state that the range is "Probably South America"—a logical supposition, as most of the American specimens described by Werner in this paper came from South America.

P. mentalis, however, belongs to the group of the genus with twelve longitudinal rows of tubercles on the back. Most of the other characters mentioned in the type description are not distinctive. Twelve lamellae under the fourth toe are said to be present in *P. mentalis*; fourteen are present in both *P. homolepidurus* and *P. lanei*.

Distribution. Records of *Phyllodactylus tuberculosus* from continental Mexico are from the following states: Chihuahua (Cope, 1900); Colima (Dugès, 1870, 1896); Durango (Baird, 1859; Boulenger, 1885; Cope, 1887; Günther, 1890; Van Denburgh, 1897); Guerrero (Günther, 1890; Dugès, 1896; Gadow, 1905); Jalisco (Dugès, 1870, 1896; Cope, 1887; Günther, 1890); Michoacán (Dugès, 1896); Nayarit (Moequard, 1899); Oaxaca (Sumichrast, 1880; Cope, 1887; Günther, 1890; Gadow, 1905; Mertens, 1930); Puebla (Dugès, 1896); Sinaloa (Boulenger, 1885; Günther, 1890; Van Denburgh, 1897); Sonora (Allen, 1933). The records from Chihuahua (if correct) and Sonora very probably refer to *P. homolepidurus*. The record from Puebla seems doubtful. The others quite possibly refer to *P. lanei*.

Remarks. No. 585, measuring 24.5 mm. from snout to vent, was probably captured soon after hatching. None of the females contain eggs in the oviducts.

The species is named for Dr. H. H. Lane, who has forwarded in every possible way my work on Mexican herpetology.

Hemidactylus turcicus (Linné)

(Plate XXIII, fig. 2)

Two specimens (DHD and HMS Nos. 1515, 1516) were taken at Hacienda La Clementina, 12 miles east of Llera, southern Tamaulipas, Mexico, on August 9 and 10, 1934. One was found under machinery in an open-sided shed; the other was taken on the inside of a box in a deserted house.

The characters are essentially those assigned by Boulenger

(1885a). The first pair of postmentals are separated on the median line by a single scale about one third the size of either postmental. The accompanying table gives measurements and scale counts.

The only other species of *Hemidactylus* known in Mexico are *H. mabouia* (Moreau de Jonnés) and *H. exsul* Barbour and Cole. *H. mabouia* has been recorded only by Boulenger (1885a); he mentions specimens from Vera Cruz and "Mexico." It is noteworthy that Günther did not mention the species in *Biologia Centrali-Americana*.

NOTE.—*Hemidactylus navarri* Dugès (1883) was later (1896) referred by the same author to the synonymy of *Gehyra mutilata*.

Stuart (1934) states that *H. exsul*, described from Yucatan, is a synonym of *H. turcicus*.

Measurements and scale counts of *Hemidactylus turcicus*

Number.....	1515	1516
Snout to vent.....	25 0	31 5
Tail.....		31.0
Snout to ear.....	7 0	8 0
Width of head.....	5 5	7 0
Foreleg.....	8.0	10.0
Hindleg.....	9.0	13.0
Preanal pores.....	5	6
Ventral lamellae, first toe.....	6-6	6-6
Ventral lamellae, third toe.....	8-8	9-8
Ventral lamellae, fourth toe.....	9-9	10-10
Ventral lamellae, first finger.....	6-6	6-6
Ventral lamellae, third finger.....	7-7	7-7
Ventral lamellae, fourth finger.....	8-8	8-8
Upper labials.....	7-8	7-8
Lower labials.....	7-7	8-8
Ventral scales, longitudinal count.....	42	49

Iguana rhinolopha Wiegmann

Six specimens are in the collections: Vera Cruz, near Tierra Colorada, July 15-17, 1932 (EHT and HMS Nos. 2043, 2199). Sinaloa, Presidio, near Mazatlán, July 2, 1934 (EHT Nos. 650-653).

The large scales in the dorsal crest vary from 51 to 58 in number from the occiput to the base of the tail. In the youngest specimen

(84.5 mm. from snout to vent) the median scales on the snout are distinctly tubercular, although not so strongly as in the larger specimens.

The species has been previously reported from the following states: Chiapas (Boulenger, 1885b); Colima (Cope, 1887; Dugès, 1870, 1896; Gadow, 1905); Jalisco (Van Denburgh, 1897); Michoacán (Dugès, 1896); Morelos? (Gadow, 1905; Totolapan); Oaxaca (Sumichrast, 1880; Günther, 1885; Cope, 1887); Puebla (Ferrari-Perez, 1886; Cope, 1887); Sinaloa (Boulenger, 1885b; Günther, 1885; Van Denburgh, 1897); Tabasco (Cope, 1887); Vera Cruz (Boulenger, 1885b; Günther, 1885; Ferrari-Perez, 1886; Cope, 1887; Gadow, 1905). It is also known from Cozumel Island (Boulenger, 1885b; Cope, 1885; Günther, 1885; Cope, 1887).

Ctenosaura pectinata (Wiegmann)

Ctenosaura brachylopha Bailey, 1928.

Ctenosaura teres brachylopha Cope, 1886.

Fifteen specimens are in the collections, from the following localities: Guerrero, near Puerto Amitzingo, southwest of Puente de Ixtla, June 22, 1932 (EHT and HMS Nos. 677, 774); near Junction of Acapulco-Mexico highway and Rio Balsas, June 23, 1932 (EHT and HMS No. 842); 1 mile north of Organos, south of El Treinte, June 28, 1932 (EHT and HMS No. 1297); near Tierra Colorada (EHT and HMS No. 1539, June 30, 1932; No. 1657, July 4, 1932); 16 miles south of Tierra Colorada, July 4, 1932 (EHT and HMS No. 1441). Nayarit, near Tepic, July 31, 1934 (EHT No. 936). Sinaloa, 10 miles south of Presidio, near Mazatlán, July 19, 1934 (EHT Nos. 525-527); near Mazatlán, July 20, 1934 (EHT No. 583); near Presidio, near Mazatlán, July 21, 1934 (EHT Nos. 654-656).

Bailey (1928) distinguishes *C. pectinata* from *C. brachylopha* by the continuation in the former of the enlarged scales of the dorsal crest over the sacral region. He restricts the range of the latter to the states of Sinaloa and Nayarit, and that of *C. pectinata* largely to the coastal region, in the states of Nayarit, Colima, Guerrero and Oaxaca.

The detailed study made of our specimens has failed to reveal any constant differences in color, proportions or scalation which would characterize the two forms. Although it is true that in most of the specimens within the range of *C. brachylopha* (as stated by Bailey), the sacral crest cannot be distinguished, and that most of the specimens from southern localities possess low sacral crests, yet sporadically throughout the whole territory covered by our collec-

tions there occur specimens which show either extreme in the character of the sacral crest, or are intermediate. It would seem obvious that such a distinction, especially since it forms the only basis proposed for the separation of the two species, is at best very delicate and quite likely to vary.

In No. 774, from Guerrero, the scales of the sacral crest are enlarged so slightly that they can scarcely be distinguished from the adjoining scales. In another (No. 677) from the same locality, the enlarged scales of the sacral crest are placed at intervals, with several granular scales occupying each of the spaces. The series of enlarged scales of the sacral crest is present in a specimen from Mazatlán (No. 656), but is broken medially by three small, undifferentiated scales. Another specimen from Guerrero (No. 1539) lacks the sacral crest entirely, while the one from Tepic (No. 936) possesses a distinct, complete crest.

Dr. J. W. Bailey has kindly examined two of the above specimens (Nos. 774 and 1539), and has stated that he considers them as belonging to *C. brachylopha*, "even though found outside of the known bounds of distribution."

Unassociated as these variations are with other characters which might serve to distinguish the species, it seems quite unwise to attempt to recognize two forms. It is not unusual in reptiles to find that there are general tendencies in a species for some character to vary in frequency of occurrence from one extreme at one limit of its range to the other extreme at the other limit of its range, with occasional scattered occurrences of either extreme or intermediates at any point in the entire range. Many such variations are pointed out by Ruthven (1908) for different characters in various species of *Thamnophis*; so also by Blanchard (1921) in *Lampropeltis*, by Ortenburger (1928) in *Masticophis* and *Coluber*, and by Burt (1931) in *Cnemidophorus*. It seems logical to so interpret the presence or absence of visibly enlarged scales in the median sacral region—a character varying geographically and of apparently no pertinent significance as a specific or subspecific character, unaccompanied by any other discernible differences.

The arrangement of the scales intercalated between the whorls of enlarged caudals varies but little. The number is slightly more reduced in several specimens from Sinaloa than it is in the southern specimens. Contrary to Bailey's (1928) statement that a single intercalated series is present between the whorls on the distal end of the tail, there exist, in all our specimens, two. Three intercalated

Measurements and scale counts of *Ctenosaura pectinata*

Number	583	774	1441	677	656	1297	655	1539	527	1657	842	525	654	526
Sex	yg	yg	yg	♀	♂	♀	♂	♀	♂	♀	♀	♂	♀	♀
Snout to vent	47.0	59.0	61.0	112.0	130.0	134.0	157.0	157.0	157.0	169.0	172.0	200.0	232.0	235.0
Tail	122.5	157.0	155.0	285.0	283.0	323.0	293.0	384.0	319.0	413.0	391.0	225.0	336.0	.....
Snout to ear	13.0	15.0	15.0	24.0	28.0	28.0	34.0	33.0	33.5	32.5	34.0	43.0	47.0	46.0
Width of head	8.5	10.2	9.0	13.5	17.0	17.0	17.5	20.0	18.0	22.0	20.0	21.0	29.0	26.0
Hindleg	42.0	47.0	49.5	81.0	89.0	100.0	98.0	113.0	104.0	115.0	114.0	126.0	136.0	132.5
Femoral pores	7-8	7-7	6-6	5-5	7-8	5-7	7-9	5-6	7-8	4-4	6-6	6-7	8-8	6-6
Fourth toe from base of fifth	19.0	23.0	23.0	34.0	36.0	42.0	41.0	48.0	42.5	48.0	48.0	50.0	52.0	48.0
Fifth toe	7.0	8.0	8.0	13.0	14.5	17.0	19.0	19.5	18.3	20.0	20.0	22.0	22.0	21.5
Fourth finger from base of fifth	8.8	9.5	10.0	15.0	16.0	19.0	19.0	21.7	19.5	21.0	22.0	24.0	26.0	23.0
Ratio, hind leg to snout-vent	.893	.796	.811	.723	.684	.746	.624	.719	.662	.680	.662	.630	.586	.563
Scales about fifth verticil	40	40	41	36	35	42	37	39	37	43	39	41	36	41
Median dorsals to anterior border of thigh	68	57	65	60	68	65	64	64	64	67	69	71	68	64
Lamellic, first toe	11-11	12-14	11-11	14-13	12-12	13-13	13-12	11-11	11-12	13-13	13-?	13-12	12-11	12-10
Lamellic, second toe	17-19	19-20	18-18	19-20	18-19	20-21	17-19	19-19	18-18	20-21	22-21	18-19	18-17	19-17
Lamellic, third toe	22-?	28-25	25-26	28-29	23-24	27-26	25-24	26-27	26-25	28-29	30-31	24-26	23-24	22-22
Lamellic, fourth toe	34-38	40-38	36-37	41-41	34-33	38-38	35-34	39-40	36-36	42-41	43-43	38-36	36-37	33-35
Lamellic, fifth toe	22-20	24-23	22-22	25-23	20-21	24-24	22-22	21-21	21-22	26-25	25-25	22-23	21-19	20-21

series, either complete or incomplete, are present to between the tenth and eleventh whorls (maximum), three complete series are present to between the seventh and eighth whorls (maximum). Two series are present between the whorls on the remainder of the tail. In four specimens from Sinaloa there are at no place on the tail three complete rows preceding the whorls; in one (No. 526) the third row (of the series between the first and second whorls) is incomplete by two scales on one side; in another (No. 525) the third row is incomplete by two scales on each side; in Nos. 654 and 656 there are two complete rows and a short row on each side intercalated both dorsally and laterally.

The young are blue-green in color, as in the case of other species of *Ctenosaura*. With an increase of size to about 110 mm. (snout to vent), the dorsal pattern is of a rather uniform reticulation of black on blue; the ventral surfaces are light blue and the gular region is faintly spotted with darker. In slightly larger specimens (about 135 mm.), definite but dim transverse, dorsal bands are evident, about seven in number. These extend onto the belly and appear as transverse rows of circular, black spots. The gular region is more strongly maculate and the lower labial region is barred. Adults are rusty brown above, darker posteriorly, with but very faint traces of dorsal bands. One or more bands transverse the belly anteriorly. The tails of immature specimens are banded alternately with black and light blue. These bands become alternately dark and light brown in the adults, more distinct distally.

Bailey (1928) records the species from the states of Sinaloa, Colima, Nayarit, Guerrero, Oaxaca and Puebla. Dugès (1870, 1896) records it also from the states of Jalisco and Morelos.

Ctenosaura acanthura (Shaw)

Seventeen specimens are in the collections, from the following localities: San Luis Potosí, 5 miles south of Valles, June 13, 1932 (EHT and HMS No. 532). Vera Cruz, near Tierra Colorada, July 16, 1932 (EHT and HMS No. 2429); Tamaulipas, Hacienda La Clementina, 3½ miles west of Forlón, August 4-10, 1934 (DHD and HMS Nos. 1266, 1431-1434, 1566-1574).

The dorsal crest is in several specimens continuous across the sacral region, although the scales of the crest are very low.

Bailey (1928) states that the number of scales intercalated between the whorls of enlarged scales is reduced to one on the distal end of the tail. This is not the case in our specimens. The number

is reduced to one complete row, or one complete and another incomplete, between some of the whorls from the fifth to about the fourteenth. The remainder of the whorls on the distal part of the tail are separated by two rows of scales. Bailey (1928) further states that the first and second or the first, second and third whorls are separated by three rows of small scales. In several specimens of our series, the first and second whorls are separated by two complete and another incomplete rows of scales; in about an equal number they are separated by three complete rows.

The scales of the dorsal crest are all black and slightly compressed laterally. They decrease gradually in size posteriorly in males.

C. acanthura, as well as the possibly related *C. similis*, differs from *P. pectinata* in the smaller lamellar formulae, as can be seen by comparisons of the tables of measurements and scale counts.

The young, as in other species of *Ctenosaura*, are blue-green in color. In specimens about 150 mm. from snout to vent, the green is most evident laterally. Black bars are visible on the middorsal line, much as in *C. pectinata*, and these continue onto the sides of the belly. They become narrow on the sides of the body, are preceded

Measurements and scale counts of *Ctenosaura acanthura*

Number.....	1266	1433	1462	1432	1431	1434	532
Sex.....	♀	♂	♀	♀	♀	♀	♀
Snout to vent.....	159.0	227.0	228.0	233.0	233.0	235.0	260.0
Tail.....	332.0	351+					447.0
Snout to ear.....	32.5	52.5	44.0	45.0	43.0	47.0	55.0
Width of head.....	19.0	29.5	28.0	28.0	25.0	28.0	31.0
Hindleg.....	106.0	140.0	127.0	135.0	133.0	137.0	156.0
Femoral pores.....	7-7	7-8	5-6	6-6	6-7	6-7	6-7
Fourth toe from base of fifth.....	46.0	60.0	55.0	54.0	55.0	55.0	60.0
Fifth toe.....	20.0	25.0	22.0	24.0	23.0	24.0	26.0
Fourth finger from base of fifth.....	21.0	27.0	25.0	26.0	16.5	27.0	30.0
Ratio, hindleg to snout-vent length.....	.666	.616	.557	.579	.570	.573	.600
Scales around fifth verticil.....	42	42	38	38	38	41	36
Median dorsals to anterior border of hindleg.....	71	72	71	68	70	71	74
Lamellae, first toe.....	12-12	14-13	13-13	15-13	14-13	12-12	11-12
Lamellae, second toe.....	19-19	21-21	21-19	21-22	20-19	20-20	18-19
Lamellae, third toe.....	25-24	25-26	25-23	24-25	26-25	24-24	21-24
Lamellae, fourth toe.....	36-34	35-36	37-33	36-38	37-38	37-34	35-34
Lamellae, fifth toe.....	25-24	24-24	24-22	24-24	25-24	24-23	22-21

by narrow bands of whitish, and are followed by broad areas of green, appearing in this respect much like Iguana. As larger size is reached, the whole dorsum becomes uniform black in both males and females, and the venter is suffused to varying degrees with the same color.

Bailey (1928) reports this species from the states of Chihuahua, Guerrero, Michoacán, Morelos, Nayarit, Oaxaca, Sinaloa, Tamaulipas and Vera Cruz. There are also records from the states of Colima (Cope, 1887; Günther, 1890), Durango (Boulenger, 1885b; Günther, 1890), Jalisco (Dugès, 1896), Mexico (Boulenger, 1885b; Günther, 1890), Puebla (Cope, 1885; Ferrari-Perez, 1886; Gadow, 1905), and Yucatán (Cope, 1886; Günther, 1890; Ives, 1891). It is very probable that the records from Yucatán are erroneous, and possibly also those from Puebla.

Ctenosaura similis (Gray)

Five specimens were secured on July 17, 1932, near Tierra Colorado, Vera Cruz (EHT and HMS Nos. 2045-7, 2127, 2128).

In coloration, character of the dorsal crest and arrangement of caudal scales this species differs markedly from an apparently related species, *C. acanthura*, whose range it overlaps.

The adults are rusty brown in color anteriorly, becoming largely black posteriorly. About eight dark crossbands are present on the back, the first three rather dim. The limbs are black above, with narrow bands of brown. The tail is but dimly banded.

The scales of the dorsal crest are longest on the nape in males, and decrease abruptly in size in the scapular region, somewhat as in *C. hemilopha*. The crest scales are not laterally compressed, and are white except where the dorsal black bands traverse them. In *C. acanthura* all of the crest scales are black, and there is no abrupt reduction in size in the scapular region.

The difference in the arrangement of the caudal scales is not so marked. In four of the five specimens of *C. similis* there is at no place on the tail a reduction to one row of the scales between the whorls. At least two complete series extend the full length of the tail. In these four, the first and second whorls are separated by three complete rows. In the exceptional specimen (No. 2046), however, the scales between the whorls are reduced to one row and part of another from between the seventh and eighth to between the twelfth and thirteenth whorls, the remaining whorls separated by two rows. The first and second whorls, also, are separated by two

complete and one incomplete rows. The coloration and the character of the dorsal crest, however, compares well in this specimen with the same in the other specimens.*

The specimens were shot as they basked in the sun on top of the standing walls of a tumbled-down adobe house.

Bailey (1928) records the species in Mexico from the states of Yucatán, Chiapas, Tabasco and Oaxaca. Ruthven (1912a and b) records *C. acanthura completa* (a synonym of *similis*, *fide* Bailey), from various points in southern Vera Cruz.

Ctenosaura hemilopha (Cope)

(Plate XXIII, fig. 1)

The specimens were collected by Taylor in Sonora during the summer of 1934, one (EHT No. 235) 10 miles northwest of Guaymas, June 30, the other (EHT No. 121) 5 miles southwest of Hermosillo, June 26.

These specimens differ in a number of respects from the descriptions available of *C. hemilopha* from Baja California. This species is said to have "the first and second, and occasionally the third, of these whorls separated from each other by three series of smaller smooth scales; third, fourth, fifth, and sixth spiny whorls preceded by two series of smooth scales" (Bailey, 1928, largely quoting Van Denburgh, 1922). In our specimens the first and second whorls are separated by two rows of smaller scales, with a short series intercalated (in No. 235) on the median dorsal line. The second and third whorls are separated by two complete rows of smaller scales; the third and fourth whorls, by one complete series and another short series intercalated on either side of the single median dorsal scale; one row of small scales precede the fifth and remaining distal whorls.

Secondly, it is stated that in *C. hemilopha* the dorsal crest "is continued on the middle third of vertebral line of body as series of enlarged flat plates, but is not traceable on posterior third" (Bailey, 1928). This is not the case in our specimens. The crest disappears approximately at a point above the anterior margin of the insertion of the hindleg. Moreover, neither is the statement true for MCZ No. 13179, from San Pedro Island, which specimen is figured by Bailey (1928, pl. 5). In this plate the crest may be seen to continue posteriorly to a point a short distance anterior to the anterior margin of the insertion of the hindleg.

* The table of measurements and scale counts has been inserted in the discussion under *Ctenosaura hemilopha*.

Descriptions also mention but five black blotches on the vertebral line, yet in the Sonoran specimens there are nine crossbars on the back, the anterior three of which are black; the remaining are seal-brown. Essentially the same color pattern as in the latter specimens, however, is possessed by the specimen figured by Bailey (*loc. cit.*). It is possible that the number of bars which appear black in color is a matter of age.

The lateral dark cervical bars, mentioned by Van Denburgh (1922), are very indistinct.

This rather marked variation from the descriptions of *C. hemilopha*, especially with regard to the arrangement of the caudal scales, suggests the possibility that the Sonoran form is distinct, at least subspecifically, from the form in Baja California. However, Bailey's photograph of *C. hemilopha* does not agree with his description of the species, nor with Van Denburgh's (1922), as has been pointed out above. It distinctly resembles our Sonoran specimens in coloration and in extent of the dorsal crest. If the specimen figured represents the form which exists in the lower end of the peninsula of Baja California, it is unlikely that the Sonoran form is distinct.

Measurements and scale counts of *Ctenosaura similis* and *C. hemilopha*

Number.....	<i>similis</i>					<i>hemilopha</i>	
	2046	2045	2128	2047	2127	121	235
Sex.....	♀	♀	♂	♀	♂	♀	♂
Snout to vent.....	156.0	184.0	186.5	201.0	205.0	188.0	194.0
Tail.....	326.0	361.0	403.0	.....	.....	.....	.....
Snout to ear.....	32.0	33.0	41.0	42.0	43.0	35.0	45.0
Width of head.....	19.0	20.0	22.5	23.0	23.0	21.0	23.0
Hindleg.....	102.0	120.0	130.0	124.0	129.0	105.5	126.0
Femoral pores.....	5-5	5-7	6-7	5-6	7-7	6-8	7-6
Fourth toe from base of fifth.....	42.5	49.0	54.0	51.0	54.0	40.0	49.0
Fifth toe.....	18.0	21.0	23.0	22.0	24.0	16.5	19.5
Fourth finger from base of fifth.....	19.0	22.0	25.0	25.0	26.5	20.0	23.0
Ratio, hindleg to snout-vent length.....	.653	.652	.696	.616	.629	.561	.649
Scales around fifth verticil.....	37	39	43	37	39	37	38
Median dorsals to anterior border of hindleg.....	70	68?	74	74	76	.....	.....
Lamellae, first toe.....	12-11	13-13	15-14	14-13	14-13	10-11	11-11
Lamellae, second toe.....	18-18	20-20	21-19	22-21	21-20	16-17	17-17
Lamellae, third toe.....	25-23	23-25	26-25	25-26	26-25	23-24	22-23
Lamellae, fourth toe.....	34-33	37-?	37-36	35-36	36-38	33-35	35-34
Lamellae, fifth toe.....	22-22	22-22	25-23	24-24	24-25	20-20	20-20

If, however, the specimen is different from the form occurring in southern Baja California, it would seem very probable that it represents a distinct form which also occurs in Sonora. Reëxamination of the material from these two states will be necessary to determine its exact identity.

There can certainly be no doubts longer entertained that *C. hemilopha* occurs in Sonora, although perhaps as a subspecies distinct from that of Baja California. Bailey (1928) records specimens from Camoa and Guaymas, Sonora, and Nogales, Arizona, but states that the "three young specimens from Guaymas were in all probability reared in that vicinity, the original stock having been taken there by travelers from one of the islands of the Gulf of California or from the mainland of Lower California. The Arizona record is very doubtful." Doctor Taylor observed specimens at numerous localities to the northeast of Guaymas and Hermosillo, and from this fact it seems logical to assume that the species is well established there and widely spread, possibly extending even into southern Arizona, for conditions similar to those in which Taylor observed the species exist over the entire territory.

The two specimens were obtained on rock cliffs, in which type of habitat they were frequently observed. They were quite wary and would hide far back in the cracks at the first sight of danger.

Basiliscus vittatus Wiegmann

Eleven specimens are in the collections from the following localities: Guerrero: 1 mile north of Organos, south of El Treinte, June 28, 1932 (EHT and HMS Nos. 1298, 1364, 1442-1444). Vera Cruz: 4 miles east of Encero, July 17, 1932 (EHT and HMS No. 2129); Puente Nacional, July 14, 1932 (EHT and HMS No. 2201); Tierra Colorada, July 15-16, 1932 (EHT and HMS Nos. 2202, 2203, 2417, 2044).

There are three fully developed eggs in the oviducts of one female. The stomach contents of several specimens examined consisted entirely of insects, not of vegetable matter.

The species has been reported frequently in Mexico from many localities in the southern part. Records have been published from the following states: Mexico (Boulenger, 1885b; Günther, 1890); Vera Cruz (Sumichrast, 1882; Boulenger, 1885b; Cope, 1887; Günther, 1890; Dugès, 1896; Gadow, 1905; Ruthven, 1912 a and b); Yucatán (Cope, 1866, 1887; Barbour and Cole, 1906); Oaxaca (Sumichrast, 1880; Cope, 1887); Colima (Cope, 1887); Chiapas (Ferrari-Perez, 1886; Dugès, 1896); and Guerrero (Gadow, 1905).

Crotaphytus collaris collaris (Say)

(Plate XXIV, fig. 1)

Four specimens were collected in 1932, in the following localities: San Luis Potosí: 30 miles north of Matehuala, August 20 (EHT and HMS Nos. 4050, 4051). Durango: 6 miles northeast of Pedriceña, August 27 (EHT and HMS No. 4484). Coahuila: 4 miles west of Saltillo, August 23 (EHT and HMS No. 4305).

The two specimens from San Luis Potosí are strikingly different in color pattern from the other two and from specimens in the Kansas University Museum from the United States. The anterior black collar is broken on the neck in three places, and the posterior collar is broken on the median line. Following these there are five transverse black bars across the back and extending onto the sides in one specimen, and six in the other. They are broken in a number of places in the latter specimen, and are absent on the tail except for two indistinct bars on the base, but in the other specimen are complete and continue to the tip of the tail, brown in color except for a single black band at the base of the tail.

The specimen from Durango has a few rounded, black or dark spots arranged in irregular transverse series across the back.

There are two rows of interorbital scales in all specimens; the median supraorbitals are slightly enlarged, and the dorsal scales are not enlarged on the median line. Despite the peculiarities in coloration of the Matehuala specimens, they cannot be considered distinct from *C. collaris* on the basis of the two specimens available. As shown in the following table, there are no distinct proportional differences.

Measurements and scale counts of *Crotaphytus collaris collaris*

I Number.....	4050	4305	4484	4051
II Sex.....	♀	♀	♀	♀
III Snout to vert.....	80.0	81.8	85.3	88.0
IV Tail.....	174.5	169.0	185.8	175.0
V Total length.....	254.5	250.0	271.1	263.0
VI Width of head.....	20.0	21.0	21.0	22.0
VII Snout to ear.....	20.0	21.0	23.0	24.5
VIII Hindleg.....	78.0	77.0	76.6	87.0
IX Femoral pores.....	20-20	18-19	20-20	20-20
X Ratio, VIII to III.....	.975	.941	.891	.988
XI Ratio, IV to V.....	.685	.673	.681	.665

The species has been reported from the states of Coahuila (Yarrow, 1883; Garman, 1887; Burt, 1928); Nuevo León (Yarrow, 1883; Günther, 1890; Cope, 1900; Gadow, 1905); and Chihuahua (Yarrow, 1883; Cope, 1887, 1900; Günther, 1890; Burt, 1928). Allen (1932) places specimens of *Crotaphytus collaris* from Sonora in the subspecies *dickersonae*. If this subspecies is shown to be valid on the mainland, it is likely that the other records also of *C. collaris* and *C. baileyi* from Sonora (Baird, 1859; Yarrow, 1883; Günther, 1890; Cope, 1900; Van Denburgh, 1897, 1922) are in reality of *C. dickersonae*.

Crotaphytus wislizenii Baird and Girard

Three specimens were secured during the summer of 1934 in the state of Chihuahua, 15 miles south of Juarez, June 19 (DHD and HMS Nos. 85, 86) and 2 miles south of Moctezuma, July 20 (DHD and HMS No. 87).

The species has been recorded in Mexico from the states of Baja California (Schmidt, 1922), Sonora (Baird, 1859; Bocourt, 1874a; Yarrow, 1883; Günther, 1890; Cope, 1900; Gadow, 1905; Van Denburgh, 1922) and Chihuahua (Gadow, 1905).

Phrynosoma cornutum (Harlan)

Four typical specimens were secured during the summer of 1934: 5 miles north of Moctezuma, Chihuahua, June 19 (DHD and HMS Nos. 341, 342); 25 miles north of Bermejillo, Durango, June 27 (DHD and HMS No. 347).

Phrynosoma modestum Girard

Three typical specimens were collected during the summer of 1934: 25 miles north of Bermejillo, Durango, June 27 (DHD and HMS No. 335); and 3 miles west of La Colorada, Zacatecas, July 9 (DHD and HMS Nos. 818, 817).

The species has previously been reported no farther south than Pedriceña, Durango (Smith, 1935).

Ameiva undulata undulata (Wiegmann)

Thirty-two specimens are in the collections, from the following localities: Guerrero: 1 mile north of Organos (south of El Treinte), June 28, 1932 (EHT and HMS Nos. 1347, 1348); between Cajones and Acahuitzotla (south of Chilpancingo), July 2, 1932 (EHT and HMS Nos. 1554, 1555); between Rincón and Cajones, July 1, 1932 (EHT and HMS Nos. 1474-1476). San Luis Potosí: 5 miles south of Valles, June 12, 1932 (EHT and HMS Nos. 421-423, 542). Vera Cruz: near Tierra Colorada (west of the city of Vera Cruz), July

15-16, 1932 (EHT and HMS Nos. 2204-2209, 2422-2428). Tamaulipas: 7 miles west of Victoria, August 2, 1934 (DHD and HMS Nos. 1227-1229); Hacienda La Clementina, near Forlón, August 7-10, 1934 (DHD and HMS Nos. 1455, 1522, 1523, 1525, 1526).

In scalation the specimens agree well with Barbour and Noble's (1915) description; Ruthven (1912) has described color variations as shown in males and females.

The species has been reported from the states of Vera Cruz (Cope, 1862, 1885, 1887; Ferrari-Perez, 1886; Günther, 1890; Gadow, 1905; Ruthven, 1912 a and b); Oaxaca (Sumichrast, 1880; Cope, 1887; Günther, 1890; Gadow, 1905); Chiapas (Bocourt, 1874b; Dugès, 1896); Colima (Cope, 1887); Guerrero (Gadow, 1905); and Michoacán (Dugès, 1896).

Heloderma horridum (Wiegmann)

A single specimen (EHT and HMS No. 773) was collected at night eleven miles southwest of Puente de Ixtla, Guerrero, Mexico, on June 22, 1932. The habitat in which it was found was one of grass and deciduous trees, quite unlike the arid, barren habitat which *H. suspectum* as a rule occupies.

The small tubercles about the larger ones, said by Cope (1900), quoting Wiegmann, to be absent in *H. horridum*, but present in *H. suspectum*, are present in this specimen, although much smaller than in specimen of *H. suspectum* of approximately the same size. A character of great difference in the two species is the size of the ear opening. In the specimen of *H. horridum*, it is about 4.5 mm. broad and 3 mm. long, while in a specimen of *H. suspectum* of approximately the same size the ear opening is 8 mm. broad and 4.5 mm. long. In other specimens of *H. suspectum* it is proportionately large. The claws of *horridum* are about 10 mm. long, and of the *H. suspectum*, 6 mm. As Cope (1900, p. 480) has pointed out, the tail is much longer in proportion to the body length in *H. horridum* than it is in *H. suspectum*. The caudal annuli are much fewer in *H. suspectum* (45-50) than in the Mexican form (78).

The coloration of the specimen agrees well with previous descriptions.

Measurements and scale counts are as follows: snout to vent, 266 mm.; tail, 213 mm.; snout to anterior border of ear, 49 mm.; foreleg, 83 mm.; hindleg, 90 mm.; fourth toe from base of fifth, 28 mm.; third finger (longest) from base of fourth, 18.5 mm.; scales from gular fold to anus, 62; caudal annuli, 78; scales on top of head between corners of mouth, 21.

Surprisingly few locality records of this species are available. Gadow (1905) remarks that "In Guerrero and Oaxaca, Colima and Jalisco everybody speaks of the 'Escorpión' . . . Hundreds of times I have offered much money, even to be taken to its lair, but all in vain." It is known from the following states: Sinaloa (Bocourt, 1878; Boulenger, 1885b, 1891; Günther, 1885; Cope, 1887; Gadow, 1905), Oaxaca (Bocourt, 1878; Sumichrast, 1870, 1880; Boulenger, 1885b, 1891; Günther, 1885; Cope, 1887; Gadow, 1905), Guanajuato (Günther, 1885), Jalisco (Dugès, 1870, 1896), Michoacán (Dugès, 1896; Gadow, 1905) and Colima (Dugès, 1896).

Anclytropis papillosus Cope

(Plate XXIV, figs. 2 and 3)

Two specimens (EHT and HMS Nos. 535, 539) of this apparently extremely rare species were secured by Doctor Taylor and myself about twenty miles south of Valles, San Luis Potosí, on June 13, 1932, in a region of dense brush. They were found burrowing in rotten logs near an ant nest. Apparently they were feeding upon termites or ants, which were numerous in the logs.

The specimens agree almost perfectly with Cope's (1900) description. The scale rows about the body are twenty-four anteriorly, eighteen near the tail. In one specimen the parietal is fused on one side with the small scale which usually separates the parietal from the postocular. In the other specimen the small third supralabials are absent. No. 539 is 156 mm. from snout to vent; the tail is regenerated; 4.5 mm. from tip of snout to the "*rictus oris*." No. 535 is 90.3 mm. from snout to vent; tail, 30.3 mm.; tip of snout to the "*rictus oris*," 3.5 mm.

Caudal chevrons, which Camp (1923) says are questionably present, were found in the specimen examined for this character (No. 539).

The species has been known previously only from Jalapa (type locality; two specimens) and Motzorongo (Gadow, 1905; one specimen), Vera Cruz. One of the specimens from Jalapa was apparently retained by the Geographical and Exploring Commission of the Republic of Mexico, and the specimen is now possibly lodged in the Museo Nacional in Mexico City. The whereabouts of the other specimen (mentioned by Cope, 1900) is problematical. The latter author states that no specimens are in the United States National Museum. Gadow's specimen is undoubtedly in the British Museum.

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PLATE XXIII

FIG. 1. *Ctenosaura hemilopha*. Male, EHT No. 235. Snout to vent, 194.0 mm.

FIG. 2. *Hemidactylus turcicus*. Young. DHD and HMS No. 1516. Total length, 62.5 mm.

PLATE XXIII



PLATE XXIV

FIG. 1. *Crotaphytus collaris collaris*. Female, EHT and HMS No. 4051:

FIG. 2. *Anelytropsis papillosus*. Side view of head. EHT and HMS No 535. $\times 10.5$.

FIG. 3. Same, dorsal view of head.

PLATE XXIV

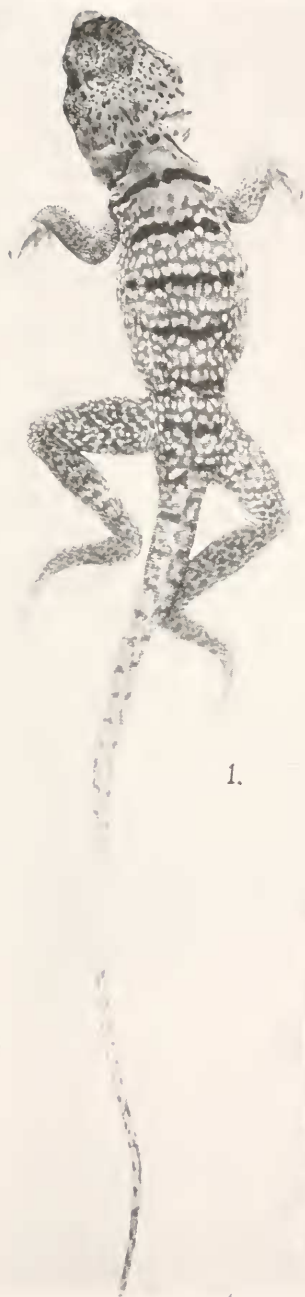


PLATE XXV

- FIG. 1. *Phyllodactylus tuberculosus*. From Wiegmann, 1835. Original size.
FIG. 2. *Phyllodactylus homolepidurus*. Male, type.
FIG. 3. *Phyllodactylus laanci*. Male, type.
FIG. 4. *Phyllodactylus tuberculosus*. Ventral surface of foot. From Wiegmann, 1835. Original size.

PLATE XXV



1.



2.



3.



4.